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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/454,566	12/07/1999	DAVID T. LINDNER	SAA-(122.161	3884

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EXAMINER	
LIN, KENNY S	

ART UNIT	PAPER NUMBER
2154	4

DATE MAILED: 09/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/454,566	LINDNER ET AL.	
	Examiner	Art Unit	
	Kenny Lin	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Claims 1-7 are presented for examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for making a permanent-type connection to the network I/O device for the control element or for the monitoring element, does not reasonably provide enablement for specializing the general purpose query protocol, which would ordinary be used in computer-to-computer communications for making ad hoc queries of an external device, to use by the industrial control system in performing frequent communication of control and monitoring information between the controller and the control element or the monitoring element of the industrial control system. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The specification fails to teach one of ordinary skill in the art how the general purpose query protocol is specialized in the control system as used in computer-to-computer communication for making ad hoc queries of an external device. No working examples disclosing a computer-to-computer communication for making ad hoc queries of an external device has been provided. Without this disclosure, one skilled in the art cannot practice the invention without undue experimentation

because of the following raised questions: How does making a permanent-type connection relate to computer-to-computer communications for making ad hoc queries of an external device? How is the general purpose query protocol specialized according to computer-to-computer communication system? Please give specific examples or further explanations.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The following term lacks proper antecedence basis:

   i. The Open System Interconnection – claim 1;

   ii. The transport layer – claim 2;

   iii. The network communication model – claim 2;

   iv. The open MODBUS/TCP protocol – claim 4.

b. The claiming language in the following claim is indefinite:

   i. The controller for performing communication… - claim 1, lines 9-10 (i.e. the controller performs communication…). The over use of punctuation makes it difficult to determine exactly what is being controlled by the controller and what is related to the elements.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naismith et al, U.S. Patent Number 6,327,511.

8. As per claim 1, Naismith et al taught the invention substantially as claimed including a method for adapting a general purpose query protocol for use by an industrial control system (figs.1 and 2, col.1, lines 65-67, col.2, lines 22-27), the industrial control system including a controller for providing control (col.3, lines 1-4), via a network for communication using TCP (col.2, lines 46-54), over an industrial process (col.2, lines 55-67) through at least one control element (32, 36; fig.1) and at least one monitoring element (22, 26; fig.1), each coupled to the network via a network I/O device (col.1, lines 22-27), the controller for performing communication with the network I/O devices according to the general purpose query protocol (col.3, lines 1-7), the method comprising the step of:

a. Making a permanent-type connection to the network I/O device for the control element or for the monitoring element based on an analysis of communication transactions between the controller and the control element or the monitoring element (col.6, lines 29-45, 50-60, col.7, lines 13-22);

Thereby specializing the general purpose query protocol (col.3, lines 14-27), which would ordinarily be used in computer-to-computer communications for making ad hoc queries of an external device, to use by the industrial control system in performing frequent communication of control and monitoring information between the controller and the control element or the monitoring element of the industrial control system (col.3, line 60 to col.4, line 1).

9. Naismith et al did not specifically disclose about OSI seven-layer model. However, it is well known in the art that TCP, used in Naismith el al's control system, is defined protocol of the Transport layer of OSI seven-layer model for network communication. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of OSI model in Naismith et al's control system for communication purposes.

10. As per claim 2, Naismith et al further taught that the permanent-type connection is a connection, at the transport layer of the network communication model, that is left open for later use after an earlier use (col.2, lines 22-27, col.3, lines 14-27).

11. As per claim 3, Naismith et al further taught the step of making available use of a protocol in which a single command from the controller performs both a read register and a write register instruction (col.4, lines 45-51).

12. As per claim 4, Naismith et al further taught that the protocol is compatible with the open MODBUS/TCP protocol (col.3, lines 1-10, 16-27, col.4, lines 45-51).

13. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naismith et al, U.S. Patent Number 6,327,511, as applied to claims 1-4 above, and further in view of Pettit et al, U.S. Patent Number 4,669,040.

14. As per claim 5, Naismith et al taught the invention substantially as claimed in claims 1-4. Naismith et al did not specifically teach to include the steps of:

a. Rate tuning the controller so as to adjust how often to communicate with the control element or the monitoring element; and
b. Duration tuning the controller so as to adjust how long to wait for the control element or the monitoring element to respond to a query.

Pettit et al taught the steps of rate tuning and duration tuning (col.1, lines 15-19, 33-38, 44-50, col.2, lines 9-21, 35-40, 49-56, col.6, lines 46-50, line 65 to col.7, line 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Naismith et al and Pettit et al because Chaffee et al's tuning method enables Naismith et al's control system to also control the communication frequent rates and respond periods of the elements.

15. As per claim 6, Naismith et al and Pettit et al taught the invention substantially as claimed in claim 5. Naismith et al further taught that the network is an Ethernet-type network (figs.1 and 2, col.1, lines 17-20, col.2, lines 50-52).

16. As per claim 7, Naismith et al and Pettit et al taught the invention substantially as claimed in claims 5-6. Naismith et al further taught that the controller is a programmable logic controller (col.1, lines 17-20, col.2, lines 50-54)

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chaffee et al, U.S. Patent Number 5,684,375, disclosed self-tuning controller.

Glanzer et al, U.S. Patent Number 6,424,872, disclosed control system using OSI layers.

18. A shortened statutory period for reply to this Office action is set to expire THREE MONTHS from the mailing date of this action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenny Lin whose telephone number is (703)305-0438. The examiner can normally be reached on 8 AM to 5 PM Tuesday to Friday and every other Monday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (703)305-9678. Additionally, the fax numbers for Group 2100 are as follows:

Official Responses: (703) 746-7239

After Final Responses: (703) 746-7238

Draft Responses: (703) 746-7240

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-5140.

ksl
September 20, 2002

ZARNI MAUNG
PRIMARY EXAMINER